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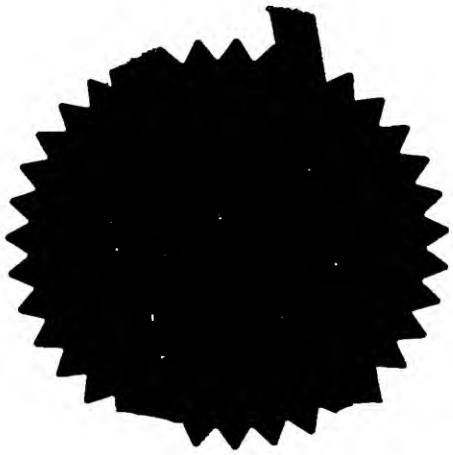

Signed William Morell

Dated 8 March 2005

Patents Form 1/77

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P01/7700 0.00-0325191.5

THE PATENT OFFICE
29 OCT 2003
NEWPORT

Request for grant of a patent

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1. Your reference

LFOOT RAS/Y/438 29 OCT 2003

2. Patent application number
(The Patent Office will fill in this part)

0325191.5

3. Full name, address and postcode of the or of each applicant *(underline all surnames)*

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Patents ADP number *(if you know it)*

If the applicant is a corporate body, give the country/state of its incorporation

4. Title of the invention

COMPRESSED GAS STORAGE CYLINDER LIFTING CLAMP

5. Name of your agent *(if you have one)*

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F51/77
21.10.04

Patents ADP number *(if you know it)*

6. If you are declaring priority from one or more earlier patent applications, give the country and the date of filing of the or of each of these earlier applications and *(if you know it)* the or each application number

Country	Priority application number *(if you know it)*	Date of filing *(day / month / year)*

7. If this application is divided or otherwise derived from an earlier UK application, give the number and the filing date of the earlier application

Number of earlier application	Date of filing *(day / month / year)*

8. Is a statement of inventorship and of right to grant of a patent required in support of this request? *(Answer 'Yes' if:*

a) any applicant named in part 3 is not an inventor, or
b) there is an inventor who is not named as an applicant, or
c) any named applicant is a corporate body.
See note (d))

Patents Form 1/77

9. Enter the number of sheets for any of the following items you are filing with this form. Do not count copies of the same document

Continuation sheets of this form	
Description	2
Claim(s)	4
Abstract	1
Drawing(s)	4

10. If you are also filing any of the following, state how many against each item.

Priority documents	
Translations of priority documents	
Statement of inventorship and right to grant of a patent *(Patents Form 7/77)*	
Request for preliminary examination and search *(Patents Form 9/77)*	1
Request for substantive examination *(Patents Form 10/77)*	1
Any other documents *(please specify)*	

11. I/We request the grant of a patent on the basis of this application.

Signature L. Foster Date 24/10/2003

12. Name and daytime telephone number of person to contact in the United Kingdom MR. LIONEL FOSTER 01274 671420

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Compressed Gas Storage Cylinder Vertical Lifting Device

This invention relates to a vertical lifting device for compressed gas storage cylinders.

Compressed gas storage cylinders are used in a wide range of industrial areas. They are used, predominantly, in the metal associated industries. Gas cylinders are transported, stored and used in the vertical position, standing on their base with the valve at the top. The gas cylinders have to be moved and lifted onto trolleys and machines. The way to move the gas cylinders is to roll them or lift them either manually, using a 'Bear hug' lifting technique, or mechanically with the use of slings. The gas cylinders are very heavy and difficult to lift manually.

This Lifting Device provides a fast and easy means of lifting gas cylinders vertically, for one person, two people, or if required with the aid of mechanical means, by providing two secure handles at the sides of the gas cylinder.

A specific embodiment of the invention will now be described by way of example with reference to the accompanying drawings, in which:

Figure 1 shows the Compressed Gas storage cylinder standing in the vertical position. The Lifting Device is situated above in the open position.

Figure 2 shows the Lifting Device, in the open position, being lowered onto the gas cylinder.

Figure 3 shows the Lifting Device locked in position and lifting the gas cylinder.

Figure 4 shows, in detail, the Lifting Device's hinge.

Figure 5 shows a section through the Lifting Device frame displaying the rubber type insert housed on the shoulder.

Figure 6 shows a plan view of the Lifting Device in the open position.

Figure 7 shows a side view of the Lifting Device in the open position.

Figure 8 shows a plan view of the Lifting Device in the closed/lifting position.

Figure 9 shows a side view of the Lifting Device in the closed/lifting position.

As shown in Figure 1 the Compressed Gas storage cylinder 01 stands vertically on the ground surface 04. The Lifting Device is in the open position 02 and situated above the cylinder 01 prior to the lifting sequence.

As shown in Figure 2 the Lifting Device, in the open position 02, is lowered over the Gas storage cylinder 01 to the required handling height. The Lifting Device can be seen in the open position in Figures 6 and 7.

As shown in Figure 3 the Lifting Device handles 16 are lifted, resulting in the Lifting Device hinging upwards into the closed position 03 against the side of the Gas storage cylinder.

A detailed view of the hinge mechanism can be seen in Figure 4. The Lifting Device is constructed of two identical halves, with a female hinge connection 17 at one end and a male hinge connection 18 at the other. When in the open position, Figure 7, the square hinge lugs 06 rest against the square corner 07 preventing further radial movement. The rounded hinge lugs 05 allow the Lifting Device to hinge upwards in the closed/lifting position, Figure 8. The hinge pin 10 is a rolled pin. The two hinge pin holes 08 in the female hinge connection 17 are a tight fit for the hinge pin 10, whereas there is clearance in the hinge pin hole 09 from the hinge pin 10 in the male hinge connection 18 allowing ease of movement.

A section through the Lifting Device frame at point 12 can be seen in Figure 5. This view shows the positioning of the rubber type insert 13 that is secured to the frame surface 14 by means of adhesive. The rubber type insert 13 is also retained by means of a shoulder 11. The entire surface of the rubber type insert that makes contact with the cylinder is abraded allowing for better grip. The shoulder 11 runs the full length of the rubber type insert 13 from point 19 to point 20 as can be seen in Figures 6, 7, 8 and 9. The rubber type insert 13 protrudes out 1.5 mm from its retention shoulder 11, as can be seen in Figures 5 and 9, thus preventing contact between the Device frame and cylinder.

Figure 6 shows a plan view of the Lifting Device in the open position. Here are shown the identical halves of the Lifting Device, female hinge connections 17 and male hinge connections 18. The aforementioned rubber type inserts 13 can also be seen in situ. The internal diameter on each half of the Lifting Device is true to the size of the cylinder at 22 and 23 but the hinges are set wider than the true centre by 5mm per side. The additional width between 22 and 23 provides the cylinder clearance 25 required in the open position. At points 24 on Figures 6 and 8, the Lifting Device frame is set back to prevent contact between the frame and cylinder. Two round lifting handles 16 can be seen in Figures 6, 7, 8 and 9 welded at points 15. The rolled hinge pins 10 can also be seen.

Figure 7 shows a side view of the Lifting Device in the open position. At points 19, 20 and 21 the frame halves are folded to an angle of 7 degrees from flat. These folded points 19, 20 and 21 can also be seen in Figure 9. The open position clearance 25 from the cylinder 01 is clearly shown at the shoulder points 11.

Figure 8 shows a plan view of the Lifting Device in the lifting position. The rubber type insert 13 can be seen making precise contact with the cylinder 01. The thickness reduction of the Lifting Device frame at points 24 is visible creating clearance from the cylinder 01.

Figure 9 shows a side view of the Lifting Device in the lifting position. The 7 degree folded points 19 and 20 are seen presenting the rubber type insert 13 true to the cylinder 01. The 7 degree folded points 21 ensure that lifting points 16 form an oblique angle to the cylinder 01. The square hinge lugs 06 and rounded hinge lugs 05 are also shown.

CLAIMS.

1. A Compressed Gas Storage Cylinder Vertical Lifting Device constructed from two identical half round rubber lined frames, hinged to produce grip and with incorporated lifting points, allowing the cylinders to be lifted from the required height position.

2. A Lifting Device, as claimed in Claim 1, which is hinged in the centre with a pivotal rolled pin.

3. A Lifting Device, as claimed in Claim 2, which has two 7 degrees folds on the underside plane of the Lifting Device halves.

4. A Lifting Device, as claimed in Claim 1 and Claim 2, which has square hinge lugs at the underside to act as open position stops.

5. A Lifting Device, as claimed in Claim 1, Claim 2 and Claim 4, with rounded hinge lugs at the top to allow The Lifting Device to close.

6. A Lifting Device, as claimed in Claim 2, the frame of which is thinner at the inner hinge sections, terminating at the rubber type inserts.

7. A Lifting Device, as claimed in Claim 1, with a rubber type insert adhered to the inner surface of both halves of The Lifting Device frame.

8. A Lifting Device, as claimed in Claim 7, with a rubber type insert abraded on the surface which makes contact with the cylinder.

9. A Lifting Device, as claimed in Claim 7, with a shoulder on the underside of the inner surface of The Lifting Device frame supporting the rubber type insert.

10. A Lifting Device, as claimed in Claim 9, where the supporting shoulder thickness is half that of the rubber type insert.

11. A Lifting Device as claimed in Claim 7, where the Cylinder is gripped solely by a rubber type insert.

12. A Lifting Device as claimed in Claim 1, with two lifting points welded on.

13. A Lifting Device as claimed in any preceding claim, which is constructed from metal or plastic of sufficient strength as required for the safe lifting capacity.

14. A Lifting Device substantially as herein described and illustrated in the accompanying drawings.

ABSTRACT

COMPRESSED GAS STORAGE CYLINDER VERTCAL LIFTING DEVICE

A Compressed Gas Storage Cylinder Vertical Lifting Device consisting of two identical halves hinged in the centre. The device has one central handle on each hinged half (16, Fig 6). A rubber type insert is adhered to the device's circular inner surface on both halves. The rubber type insert, which is retained by means of a shoulder on the underside of the frame, forms the sole contact between the device frame and cylinder (11, Fig 5). Each half of the device frame is folded by 7 degrees at points (19, 20 and 21, Fig 6, 7 and 8). These folds produce a precise contact between the device and cylinder allowing optimum grip.
In the open position the device has clearance to be lowered over the cylinder to the required handling height (02, Fig 2). When the handles are lifted the device closes and grips the cylinder positively (03, Fig 3).

(Use figure 3)

FIG.1 **FIG.2** **FIG.3**

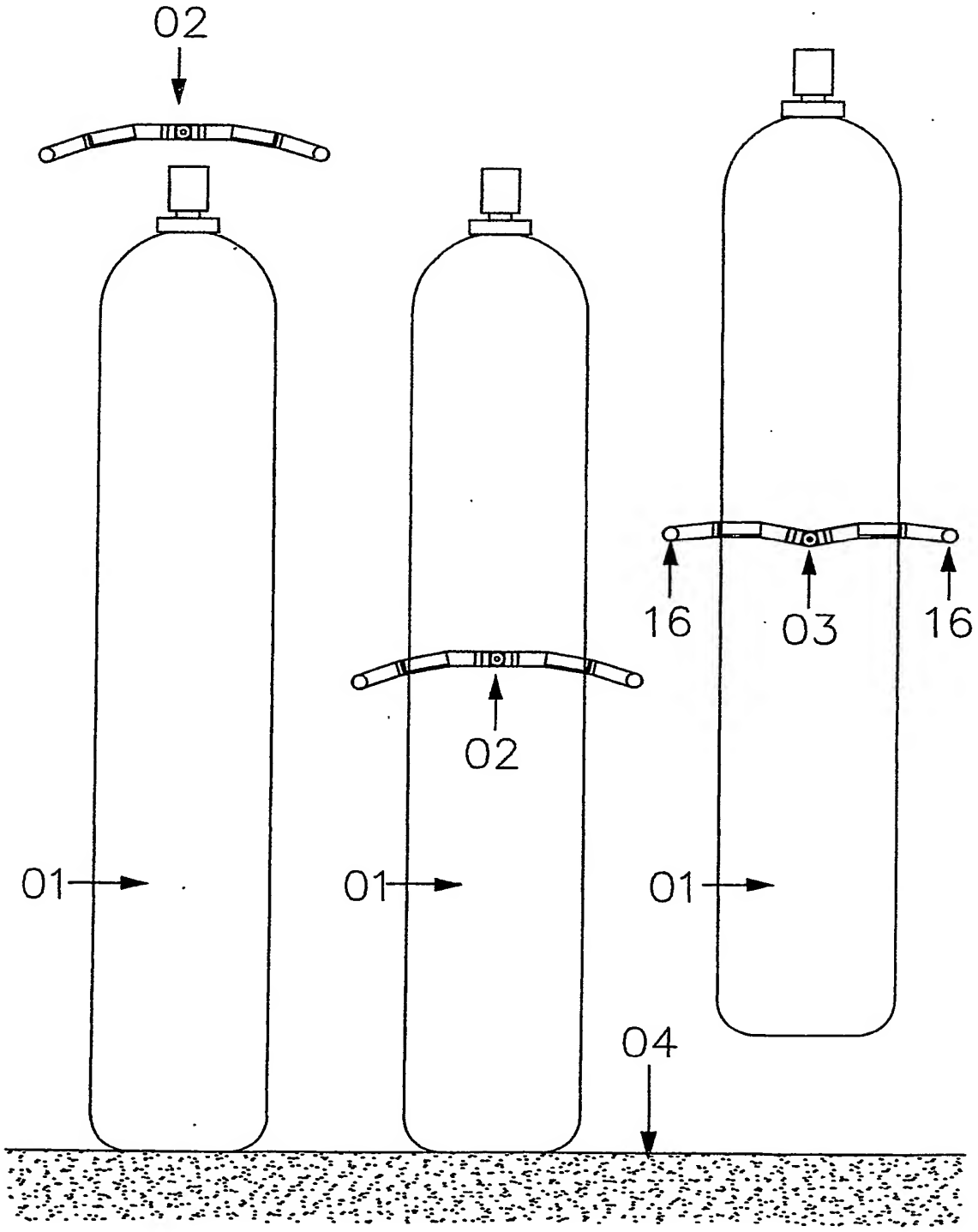


FIG.4

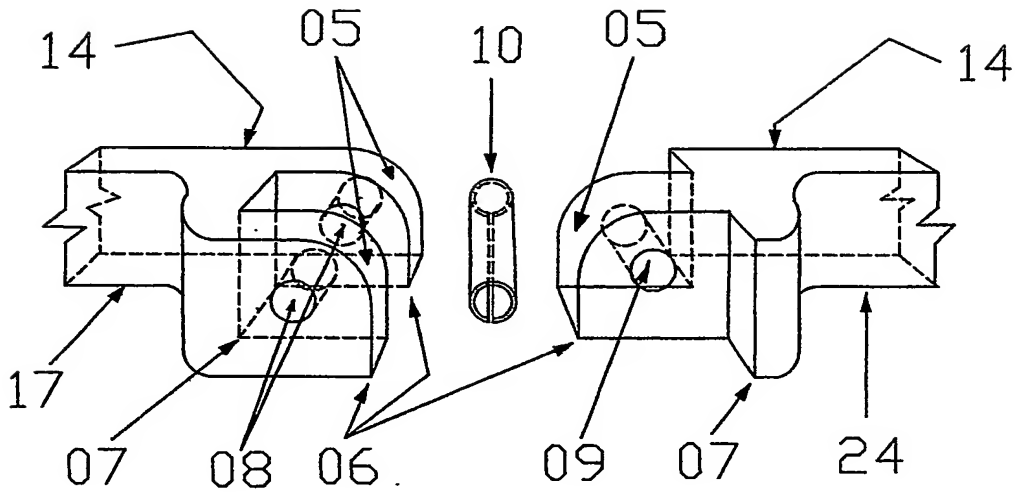
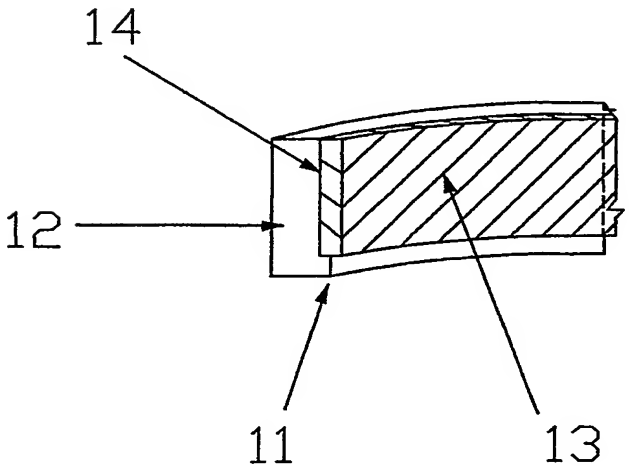


FIG.5



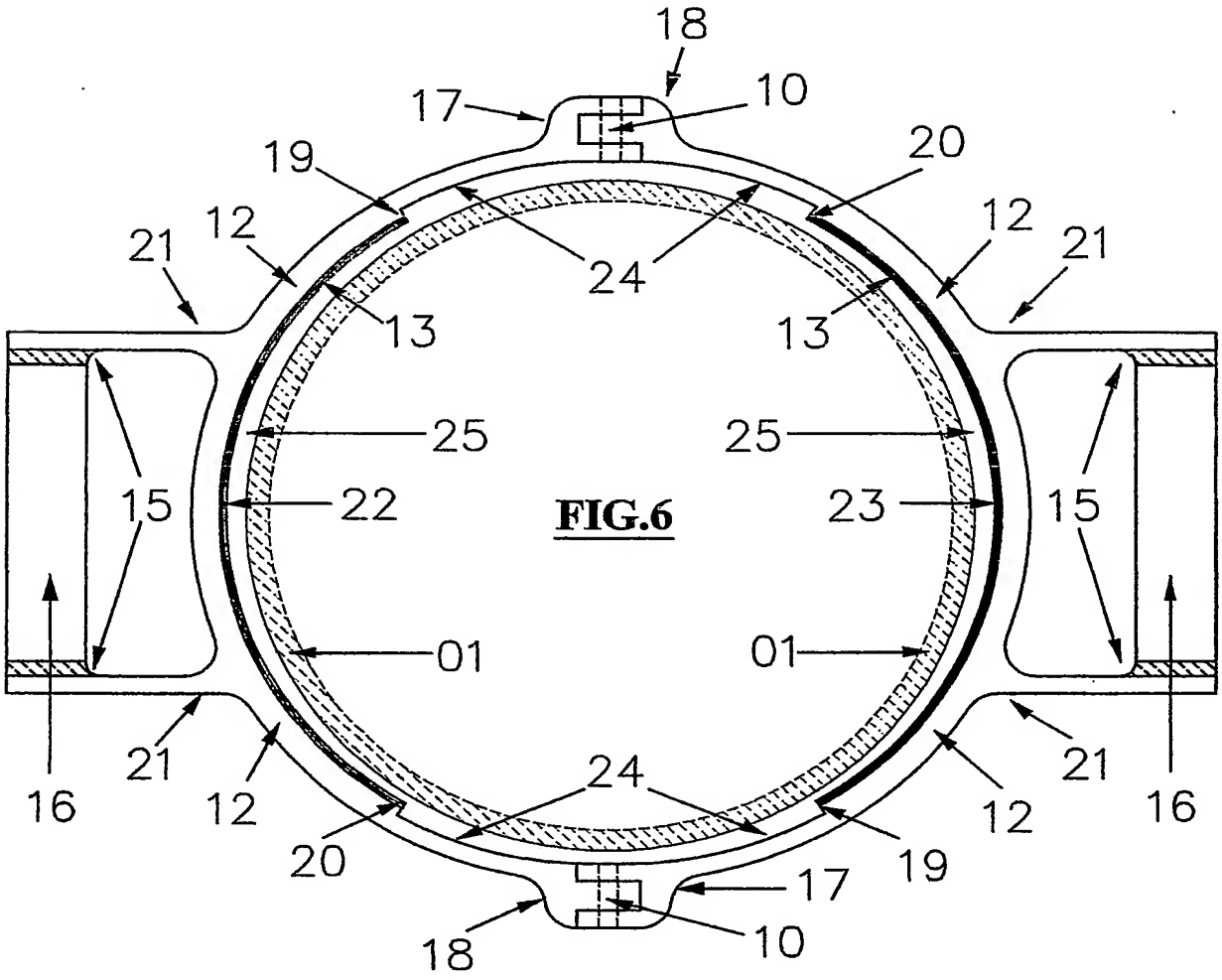

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FIG.6

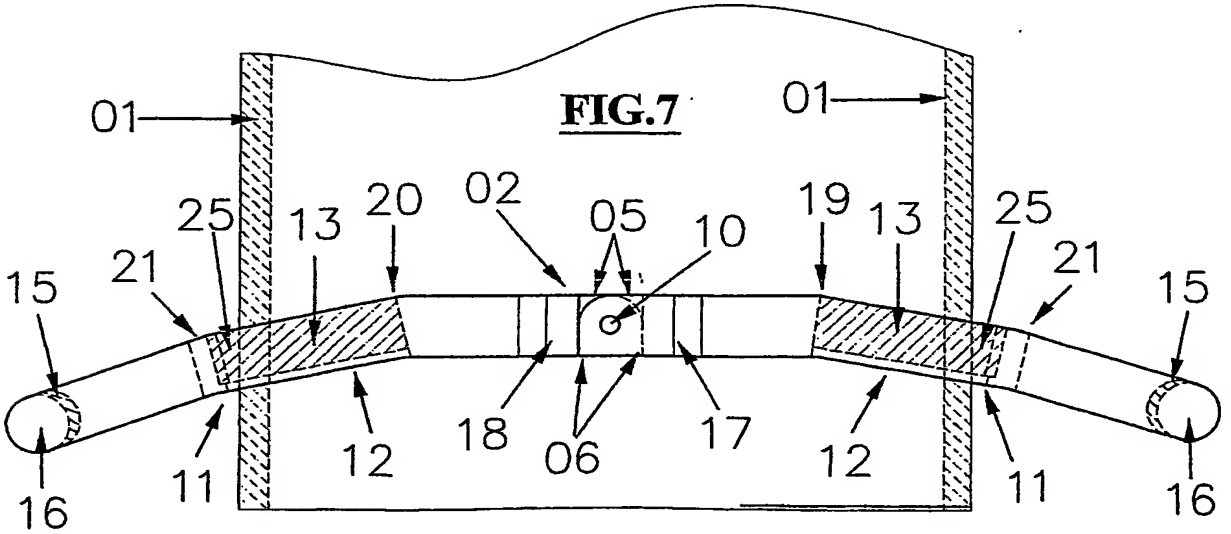
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FIG.7

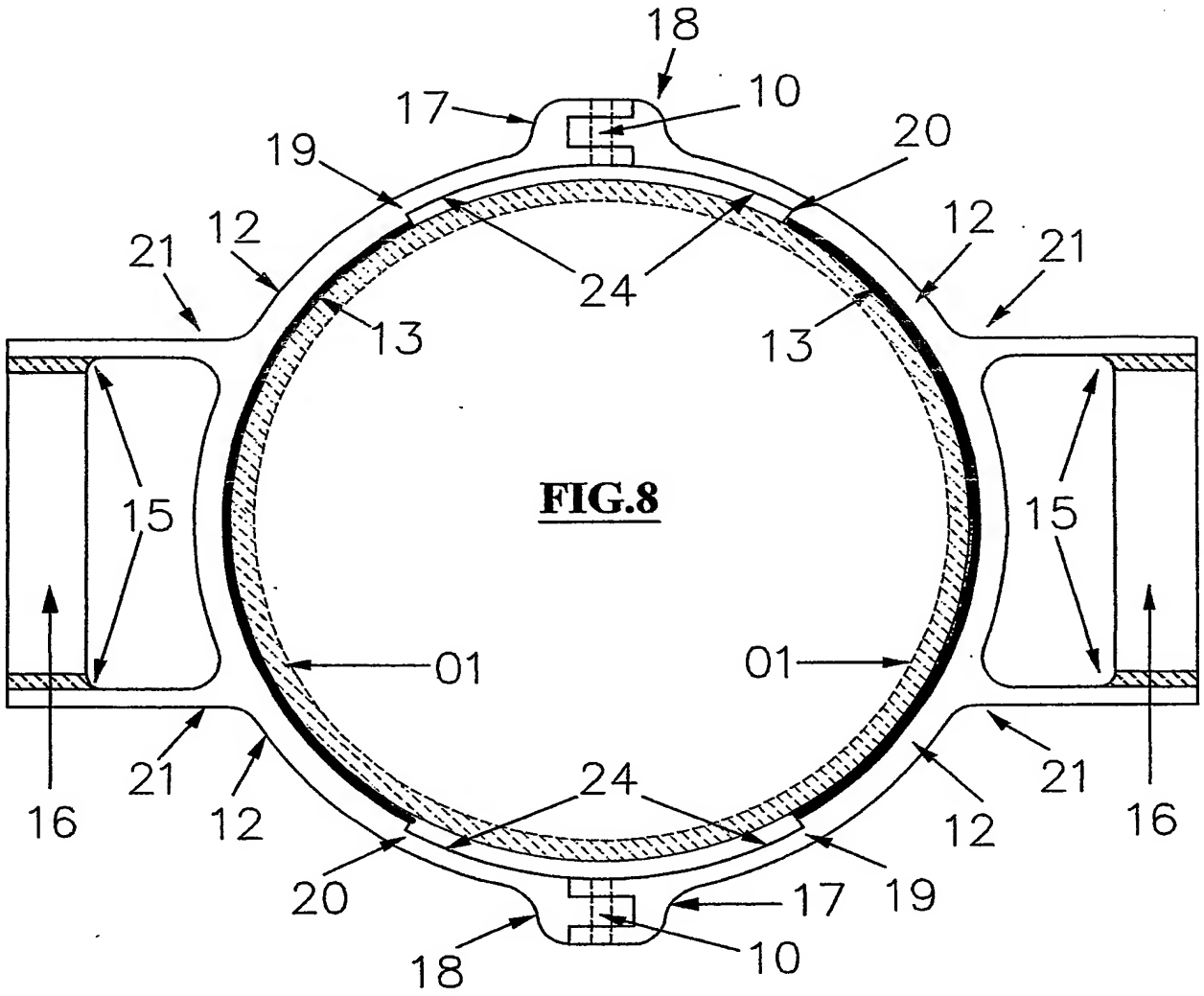
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FIG.8

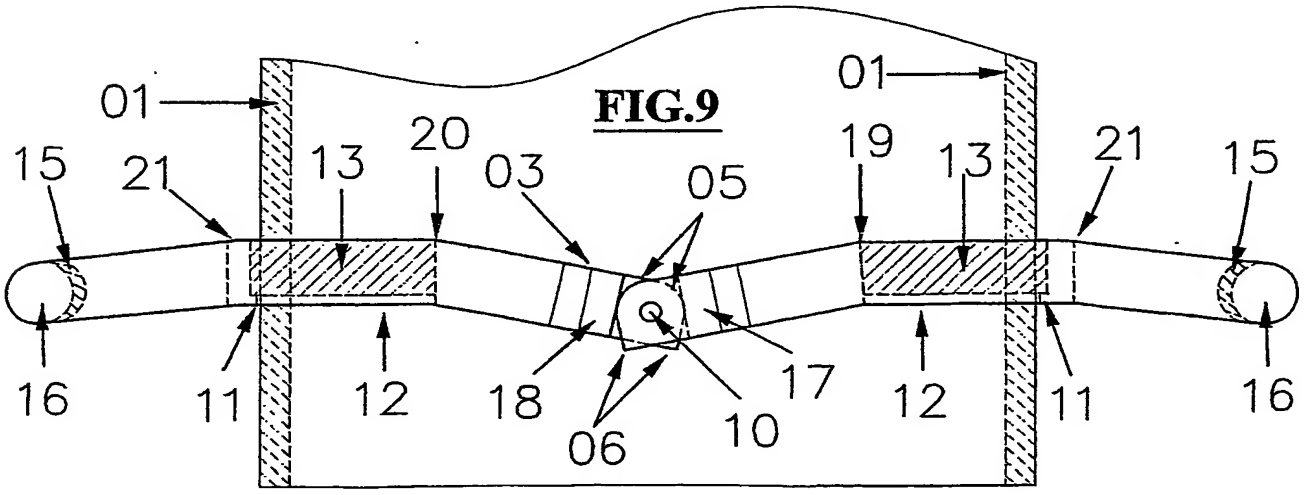
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FIG.9

Document made available under the Patent Cooperation Treaty (PCT)

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